

The data quality in the Eastern Bass Strait Survey was generally fair to good, though in places there was a marked deterioration, especially below 1.5 seconds.

The reliability of the interpretation is a function of the data quality and the closeness of the seismic grid. Fig. 3 is a schematic representation of the horizons mapped and the basinward extent to which they can be followed. The Top of Lakes Entrance (Plate VIII) and Latrobe Topographic Surface (Plate IX) have been interpreted with considerable confidence. The only deterrent to specific reliability is grid size. The Horizon near the Top of the Cretaceous (Plate X) varies considerably in reliability. In the eastern third of the area the interpreted configuration is considered to be reliable. In the remaining area, a marked decrease in definition occurs to the west and especially to the north-west. There the interpretation relies largely on phantoming to produce a continuous picture. The Basement horizon (Plate XI) has only been mapped where it can be interpreted with confidence. Thus it is confined to the margins of the basin and its reliability is a function of grid size.

It should be noted that the change in contour interval on the maps from 100 feet to 500 feet indicates the areas where the interpretation is less reliable, due either to data quality or grid size.

Velocity Data - Velocity information is available from most wells both onshore and offshore and also from the velocity functions used to make the dynamic corrections prior to stacking. This indicates that abrupt and significant lateral velocity variations occur in many places in the Gippsland Basin.

These variations are apparently due to two main factors.

In almost all cases the velocity changes within the Miocene are associated with rapid lateral lithological variations from marl to limestone or sandstone. Fortunately many of these changes result in some form of anomalously dipping reflection event and are thus detectable. Much of the lithological variation appears to be associated with some type of channel-filling within the Miocene section.

Large scale structural relief also seem to result in significant lateral velocity variations over these structures due to the rapid variation in types and thicknesses of particular stratigraphic units across these structures. This is especially noticeable in the structures formed during the Eocene - Oligocene (Barracouta, Marlin, Snapper, Dolphin, etc.) where structural growth has been accompanied by rapid thinning of the Lakes Entrance Formation.

The random and abrupt nature of the velocity variation and the sparseness of accurate data make it impossible to make an accurate contour map of the average velocity variation in the offshore Gippsland area at this time. However an attempt was made to approximate these variations by mapping the results of the well surveys and the various velocities used by G.S.I. to make dynamic corrections to the seismic data. These were plotted and a regional pattern of the general velocity variation was established. The area of most significant change was in the vicinity of the Barracouta-Snapper-Cod-Marlin-Tuna structures. Elsewhere more of a constant velocity situation seemed to exist. A general velocity curve was calculated for this area, (Fig. 4).

These data were used to determine the depth to horizons where the dynamic correction data indicated that changing velocities existed. Elsewhere the general velocity curve was used to map the depth to horizons. In the area of overlap between the various curves a velocity gradient was assumed. In all cases the velocity gradient was chosen to coincide with an area of steep dip on the flanks of the structures. Plate VII indicates the velocity patterns used.

B) Bass Basin

Seismic Data - All available geological and geophysical data has been incorporated in this report. The seismic grid in the basin, except for local detailing, is reconnaissance and therefore the interpretation presented is of a regional nature.